

## Trade liberalisation and its impact on regional development: theoretical and experimental studies

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**TRADE LIBERALISATION  
AND ITS IMPACT  
ON REGIONAL  
DEVELOPMENT:  
THEORETICAL  
AND EXPERIMENTAL  
STUDIES**

**A. A. Fedyunina\***



*The existing theoretical and empirical literature focusing on interconnections between international trade, trade liberalisation, and economic development provides ample evidence pertaining to nations and industries. However, another dimension of trade liberalisation — the assessment of the level of national or regional development — needs further research. This article sets out to analyse theoretical and empirical research works focusing on a varied spatial effect of expanding international trade on national economies and identifies factors affecting regional development. Firstly, it is established that expanding international trade is a more important source of growth for the regions of developing countries than for those of developed ones. Secondly, in terms of the regional impact of liberalisation, expanding trade has the most positive effect on border regions and those associated with lower cost of access to international markets. Thirdly, the analysis of regions having different industrial specialisation suggests that expanding international trade contributes to higher growth rates in the regions, having globally competitive national industries.*

*The conclusions presented in this article can be used for formulating an industrial policy and a regional development policy for both small export-oriented economies, namely, the Baltic Sea states, and larger economies having uneven distribution of production resources.*

*Key words:* international trade, trade liberalisation, regional development

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## **Introduction**

There is a large body of theoretical and empirical works on the effect of international trade expansion and trade liberalisation on national economic growth. In particular, in the case of developing and transitional economies, trade expansion leads to a

1.5—2.1 % or even 2.9 % increase in economic growth [11; 12]. Moreover, a long-term effect of trade liberalisation on economic growth in developed economies has been corroborated. The analysis of over 100 countries suggests that trade expansion leads to a GDP growth of at least 1 % [1; 5; 24]. However, despite general results at the national level, little is known about the nature of these effects, especially at the intra-national (regional) level.

Firstly, theoretical and empirical literature examines the effects of an increase in production efficiency through reallocation of resources between industries at the constant return to scale. These effects are linked with economic growth through specialisation in industries having comparative advantage. Such effects are described in the classical and neoclassical international trade models and tested in a number of empirical research papers [19; 30; 34].

Secondly, production efficiency increases as resources are reallocated across industries with increasing returns to scale. Such effects are found in the models of monopolistic competition within new trade theory [27; 29] and they connect economic growth and an increase in well-being with the increasing number of available types of goods and lower production costs.

Thirdly, production efficiency grows as resources are reallocated across industries from the least to the most productive firms. This contributes to a growth in revenues in the most productive firms, which results in an increase in gross productivity [32].

It seems that the above effects can exert significant influence on the intra-national growth of countries characterised by a small territory, strong export orientation, and opportunities for relatively cheap costs of resources reallocations within the country.

Countries of the Baltic Sea region present a good example. Indeed, on the one hand, these economies have relatively small territories and the costs of spatial reallocation of resources within the country are relatively low. On the other hand, these countries have shown strong export orientation over the last two decades. According to the World Bank statistics, over the period from 1995 to 2014, Denmark increased its export quota by 17 % — reaching 53.7 %, Estonia by 16.1 % — to 83.9 %, Lithuania by 44.1 % — to 81.2 %, Latvia by 24.9 % — to 59.5 %, and Poland by 24.1 % - to 47.4 %. Moreover, this trend is characteristic of the Kaliningrad region — Russia's exclave in the Baltic Sea region. According to some estimates, its export quota increased by almost 17 % to reach 50.6 % from 2000 to 2014.

The above effects influence the spatial development of large economies that are heterogeneous in terms of the distribution of productive forces. Russia's economy is one of such cases. Territorial development is affected by the distance to borders, costs of production, transportation of the final product within a country, and agglomeration effects.

Thus, the empirical evidence of intra-national effects of trade liberalisation on economic growth can be in the heart of national industrial policies aimed at decreasing spatial inequalities in the distribution of production forces.

The article explores key theoretical and empirical findings on the effect of trade expansion on regional growth in world economy. Based on the approach proposed by Brülhart [3], the author employs two criteria to classify theoretical models. The first criterion is the type of market assumed in the model. Pioneering models of urban systems are based on assumptions about perfectly competitive markets with exogenous economies of scale at the regional level, whereas new economic geography models acknowledge the existence of markets with monopolistic competition and endogenous economies of scale. The second criterion is the distribution of economic activities. In a number of models, distribution of production forces is assumed to be equal across the country, whereas some models focus on heterogeneous distribution of economic forces.

The analysis of theoretical works allows us to identify the factors of dispersion and regional growth according to the type of model and space. The analysis of empirical studies supports theoretical results and allows us to identify factors affecting regional growth under the effects of international trade expansion.

### **Export expansion and regional growth in theoretical papers**

J. Henderson [23] has published a pioneering work considering the general equilibrium model in connection with international trade and national economic activity distribution. Following the neoclassical tradition, he developed a model of economic activity distribution in cities. The model assumes that companies manufacture goods with constant returns to scale, goods are homogeneous, and workers and goods move freely within a country. The model assumes economies of scale at the city level that distinguishes this model from traditional neoclassical trade models. Return to scale is external to individual firms and assumes competition. The model distinguishes between two types of forces affecting the development of cities associated with international trade expansion. The first type is based on the assumption that a city is monocentric. Thus, large cities have to bear higher costs of internal communications. Monocentricity is a force acting in the opposite direction to the force based on the assumption about city-level scale economies. The second type of forces is related to the assumption that cities differ in their relative use of capital and labour and, therefore, have different industrial specialisation. In equilibrium, the size of a city increases with the economy of scale, intensity of production and the size of the city's major industry [23, p. 333].

Brülhart [3], analyses Henderson's model [23] and draws several conclusions.

Firstly, since workers are mobile, real wages are always equalised across cities. Thus, trade liberalisation affects the size of cities but it does not affect the redistribution of welfare across cities. Secondly, the Heckscher—Ohlin

model and the Rybczynski theorem suggest that trade liberalisation will result with an increase in the number of cities specialising in capital-intensive goods, if the country is relatively capital-abundant. Since within Henderson's model [23], capital-intensive cities are larger, trade liberalisation will increase the size of cities in capital-abundant countries and decrease it in labour-abundant ones. Therefore, the effect of trade on city development depends on the relative abundance of factors of production in a country [3, p. 62].

A major argument for constructing models of urban systems involved in international trade (models based on the assumption about heterogeneous national space) is the fact that cities bear different costs of access to international markets. Naturally, this is an important factor of the economic reality. The assumption about national space heterogeneity is found, for instance, in James E. Rauch's work [38]. In a model based on Ricardo's international trade theory, the assumption about a country's monocentric cities is accompanied by the idea of the distinctive structure of internal geography. The author introduces the existence of trade costs (in the iceberg form) and the location of cities along a straight line, perpendicular to the country's border. Therefore, it is possible to assume that cities will bear different costs of accessing foreign markets. According to this model, the population of cities, wages, and rent will decrease as the distance between a city and the border (or the seacoast) increases [38, p. 1232]. If trade costs are relatively high, some cities located closer to foreign markets will specialise in international trade, while other cities further inland remain autarkic. However, the sizes of cities involved in international trade will increase monotonically as the distance to the border (the seacoast) decreases. The size of cities that do not take part in international trade will be equalised. On the contrary, if trade costs are low and all cities specialise in international trade, the size of a city will decrease monotonically as the distance to the border increases. Thus, changes in the size of a city that takes part in international trade are affected by costs of access to international markets.

New economic geography models have made a considerable contribution to the analysis of effects of international trade on national spatial development. A pioneering model emphasising the connection between new economic geography and urban development models is described in [28]. The creation of the model was motivated by the need to explain the growth of metropolises in developing countries, which is partially caused by international trade liberalisation at the national level [28, p. 138].

The model proposed by Krugman and Elizondo [28] assumes two regions of the same country, one factor of production, and one industry consisting of horizontally differentiated goods. Generally speaking, this model is very close to Henderson's pioneering model [23], since it takes regions as monocentric cities, where the need for communication is expressed through the costs that increase monotonically as the city grows. Moreover, such regions are identical in everything, including their access to international markets. Thus, together with Henderson's model [23], they can be classified as models with equal spatial distribution. A distinctive feature of this model is

that economies of scale are now moved to the microlevel — consumers prefer diversity and bear commuting cost between regions. Consequently, consumers tend to be located closer to the maximum possible number of producers (forward linkages). At the same time, seeking lower transport costs, manufacturers which are now monopolistic competitors, locate their production forces as close to consumers as possible (backward linkages). If international trade costs are high, both backward and forward linkages affect the decision on the location of consumers and producers, which leads to the formation of an agglomeration in one of the two regions. If international trade costs are low, the development of trade ties with foreign markets downplays the role of forward and backward linkages. It makes producers and consumers indifferent to the location in either region. This results in a more even distribution of population in the regions.

Within the monopolistic competition model, Behrens et al. [2] obtain results similar to those described by Krugman and Elizondo [28]. The work considers a world consisting of two identical countries, each inhabited two symmetrical regions. The countries differ in the levels of interregional transport and international trade costs [2, p. 1279]. In the model constructed by Behrens et al. [2], two type of forces contribute to the dispersion of economic activities instead of exogenous costs on intra-city transportation, as in Krugman and Elizondo [28]. The first force is based on the assumption that some workers (farmers) are immobile between regions. The second type of forces is based on the assumption that mark-up is decreasing at higher local competition level. Authors show that trade liberalisation with constant internal transport costs results in internal dispersion. Since dispersion is associated in this model with higher welfare, the centrifugal impact of trade liberalisation on internal economic geographies turns out to be desirable.

Some works based on new economic geography models focus on the effect of trade liberalisation on the agglomeration (rather than dispersion) of economic activities. In particular, Fujita, Krugman and Venables [18] extend Krugman and Elizondo's model [28] and assume the presence of agglomeration and the absence of dispersion forces at the industry level. One of the key results is the link between trade liberalisation and concentration of economic activities of individual sectors. In a similar paper, Paluzie [35] builds a model of regional development in the case of trade liberalisation and obtains results that are completely opposite to those of Krugman and Elizondo [28], since the latter used regional transportation costs instead of non-mobile farmers as centrifugal forces.

Evidently, assumptions about dispersion forces lead to the discrepancies in theoretical prediction of models. In Paluzie's work, the intensity of dispersion forces originate in the demand of non-mobile farmers and are decreasing more rapidly than the intensity of agglomeration forces, which, in turn, determines the effect of trade liberalisation on the agglomeration of economic activities. On the contrary, most of the above works [2; 28] make assumptions about the stronger effect of dispersion forces, for instance, in the

form of exogenous costs of transportation within a city (Krugman and Elizondo) [28] or in the form of mark-up that decreases with higher competition (Behrens et al.) [2].

However, the above economic geography models do not reflect a number of characteristics of the spatial structure of territories, namely they do not take into account space heterogeneity within countries. One of the first new economic geography models that took into account space heterogeneity was proposed by Villar [43]. The model applies Krugman and Elizondo's approach [28] to a world that consists of two symmetrical regions (foreign economies) and a country comprising three regions. In general, all five regions are located along a straight line. Two out of three regions border on the neighbouring (identical) countries, whereas one region is an inland territory and it bears similar costs of access to either foreign market. The analysis shows that if foreign markets are sufficiently large, concentration in the inland region does not provide equilibrium. There are two alternatives — concentration at the borders of one of the countries or dispersion of economic activities. In other words, foreign markets act as centrifugal forces pulling the economic activities of the country between them to the borders [43, p. 377].

Despite the analysis provided in the article, Villar [43] does not give a clear answer to the question whether resulting spatial distribution of economic activities is equal across space. This question has been addressed in other works. For instance, [4] and [9] describe a world consisting of three countries. Unlike models suggesting an even spatial distribution of economic activities, these models lead to the following important conclusion. As a result of trade liberalisation, an increase in demand for an economy's exports is affected by competition from international firms. Therefore, economic activities are relocated to border regions. Agglomeration is natural and steady equilibrium. However, it usually arises in a region closest to a foreign market [9, p. 274].

Thus, the analysis of the results of urban system models and new economic geography models show that, trade liberalization leads to relocation of economic activities to border regions. However, there is no clear answer to the question what factors determine relocation. In particular, a certain spatial equilibria in a country after trade liberalization is affected by the production structure and the level of costs associated with interregional and international trade (see table 1).

The above approaches also differ in their characteristics of redistribution effects. In neoclassical models, real wages are equalised across regions, thus, there is no connection to regional inequality. This holds for internal equilibrium in new economic geography models, where mobile assets do not concentrate in a single agglomeration and real wages are equalised across regions. In the case of equilibrium and complete agglomeration, the residents of a region have a higher income than the residents of other regions. Thus, trade liberalisation can contribute to an increase in regional welfare with an easier access to foreign markets at the same time leading to a reduction in the welfare of other regions with non-mobile residents [3, p. 67].

Table 1

Spatial development, and factors and effects of trade liberalisation: Theoretical findings

Model type	Space type, author(s)	Model of the World	Dispersion forces	Trade liberalisation impact
Urban system model	Homogeneous, Henderson [23]	A system of monocentric cities with different capital intensity of production; city-level economy of scale	1. City monocentricity 2. Industrial specialisation of cities	The role of a country's relative capital intensity: a city increases in capital abundant country and shrinks in labour abundant one; real wages are equalised across cities
	Heterogeneous, Rauch [38]	A system of cities of different sizes located along a straight line perpendicular to the country's border	1. Monocentricity 2. Trade costs to access the ports within the country (in iceberg form)	The role of a city's inland position: the city size decreases monotonically towards the centre of the country, real wages are equalised across cities
New economic geography	Homogeneous, Berhens et al., Krugman, and Elizondo [2, 26; 28]	Two identical regions in a country, one homogeneous goods industry and one differentiated goods industry; specific production factors, trade partner (the rest of the world)	1. Interregional transportation costs in the iceberg form. 2. Transportation and fixed costs of monopolistic competitors [28]. 3. Some producers (farmers) are immobile across regions. 4. Producer mark-up (competition effect) [2]	The role of the dispersion forces and assumption about trade costs: there is no clear answer how resources are reallocated across a country
	Heterogeneous, Brühlhart et al., Crozet, and Soubeyran, Villar [4; 9; 43]	Two regions in a country and one partner [4; 9]	Interregional differences in trade costs	The role of the region location relative to the border: firms relocate to the border, agglomeration increases welfare in the border region



## Empirical studies of the effects of trade liberalization on regional growth

When answering the question about the connection between trade expansion and regional growth, it is important to analyse the results of empirical studies. There are numerous papers that focus on the effects of trade expansion on regional inequality. Some works use the data from only one country, mainly, Mexico, or a BRICS country — Brazil, India, or China. Studies focusing on Mexico [7; 8; 16; 20—22; 42] identify a positive link between a growth in regional disparities (spatial divergence) and an increase in trade openness. In particular, papers stress the heterogeneous effect of the country's accession to NAFTA on different regions in Mexico. However, this effect corresponds to the results of neoclassical trade models, in particular the Stopper—Samuelson theorem [7]. Regions with a stronger orientation towards foreign markets experienced a relative increase in wages and a decrease in the skill premium as compared to the regions oriented primarily towards the domestic market [7, p. 92]. The authors [42] believe that trade liberalisation and economic integration did not only reduce regional disparities but also contributed to spatial economic polarisation. The greatest positive effect was identified in the regions which have a border with North America. Similar empirical results were obtained in the case of China. Some publications [17; 25; 44] argue that international trade expansion contributed to the economic growth of border (coastal) regions.

An interesting results are obtained for Brazil [6; 10; 31]. Most of empirical papers emphasise a decrease in regional disparities. For instance, expanding export activities across Brazilian regions contributed to a decrease in poverty and inequality [6, p. 832]. This can be partially explained by trade structure in Brazil. One of the papers examines the impact of export expansion on regional disparities in Brazil and India and argues that Brazilian exports have more agricultural products (than manufactured goods) compared to India, whereas agricultural regions have higher living standards. Thus, export expansion contributed to the growth of Brazilian agricultural regions and, thus, regional convergence. The opposite situation were observed in India — an increase in the export of manufactured goods were followed by spatial divergence — [10].

The empirical evidence of a linkage between regional growth and trade expansion is abundant in cross-national research. In one of his recent works, Brühlhart reviews eleven such studies, with nine publications using urban primacy as a dependant variable. Without focusing on the changes in city sizes and urbanisation problems, we consider only those publications that use variables expressing the relative changes in regional gross product. Table 2 presents the findings of relevant empirical cross-national studies.

Table 2

**Empirical evidence of the linkage between international trade expansion and regional growth in cross-national research**

Publication	Countries, period	Dependent variable	Identification	Result
[36]	eight EU states, 1981—1997	weighted coefficient of GRP per capita variation across countries	effect of economic integration on regional disparities across countries	The result is country-dependent: economic integration and trade expansion reduce inequality in some countries (Belgium, the Netherlands, and Portugal) and increase in the others (Greece, Italy, the UK).
[33]	China, India, US, Indonesia, and Brazil, 1978—2001	GRP per capita variation and weighted coefficient of GRP per capita variation across countries	effect of trade openness on regional disparities	Trade openness does not affect regional growth.
[13]	eight countries of Central and Eastern Europe, 1991—1999	real wage variations among regions and countries	differences in openness across countries in different years	Countries of increasing openness demonstrate a rapid increase in the difference in average wages.
[41]	China, India, Mexico, Brazil, US, Germany, Italy, Spain	cross-national GRP per capita variation	linkage between export quota and GRP per capita variation	A reduction in the proportion of agricultural exports is associated with growing interregional disparities.
[37]	one hundred twenty-eight countries, 1990	Gini coefficient for cross-national topographic concentration of gross value added	cross-national differences in openness	Trade openness does not affect regional growth.

Publication	Countries, period	Dependent variable	Identification	Result
[40]	nineteen developed and seven developing economies, 1990—2006	weighted coefficient of GRP per capita variation across countries	dependence of trade quota on GRP per capita variation	Trade openness does not affect regional growth.
[39]	twenty eight countries, 1975—2005	weighted coefficient of GRP per capita variation across countries	static and dynamic effect of chosen national growth parameters on regional inequality	Countries with more pronounced regional disparities in industries' factor endowment, a lower proportion of public government spending and high internal transaction costs (developing countries) demonstrate growing interregional disparities as trade expands (as compared to developed countries)
[14]	forty-seven countries, 1990—2007	Theil index, GRP per capita	linkage between a country's economic globalisation (inclusion into economic ties with the world) and inequality index	Countries of greater economic openness demonstrate higher levels of regional inequality. Spatial effect of economic integration is stronger in countries with low and medium level of income.
[15]	twenty-two developing economies, 1990—2006	weighted coefficient of GRP per capita variation across countries	effect trade openness on regional inequality	Countries of greater economic openness show higher levels of regional disparities. The effect of inequality is higher in the poorest countries.

It can be concluded that export expansion (increase in trade openness) has different effects on spatial distribution of economic activity between regions — either decreasing or increasing. Some of the authors [14; 15; 39] consider the dependence of regional disparities on changes in external trade openness for groups of countries and identify factors that affect the equilibrium. The highest increase in regional disparities and trade openness is observed in countries with higher internal transaction costs and a low level of income. However, some works present opposite results. In particular, some works employ trade openness as a control variable in the regional inequality regression and find that trade openness does not affect changes in regional inequality and is statistically insignificant. Results of some other papers argue that the result depends on the sample of countries [36].

## Conclusions

Empirical results suggest that trade liberalisation has a long-term and statistically significant effect on the increase in a country's gross domestic product. The latter is accompanied by a higher efficiency and reallocation of resources across industries and within space. To identify such effects is important *per se*, although it does not allow us to describe the factors which affect resources reallocation.

In this paper we provided an overview of the results of recent theoretical and empirical literature. According to the results of the models of urban systems and new economic geography, trade expansion does affect relocation of economic activities within the country. However, theoretical models do not provide a clear answer to the question, how exactly resources are reallocated across countries. In particular, the effects in new economic geography models, based on the assumption of homogeneous economic space, depend on assumptions about dispersion forces. However, it is more important to distinguish factors that allow us to identify what type of regions grow higher under trade liberalization. An overview of empirical studies on the effects of trade liberalization and regional growth allows us to determine these factors. Spatial relocation of resources under trade expansion is affected by the factors that reflect the costs of international trade and the structure of production. International trade expansion contributes to the growth of certain territories within a country.

Firstly, these are the regions of the developing and transitional economies (as opposed to the regions of developed countries), because trade expansion for them becomes an important source of economic growth *per se*. Empirical results regarding a positive impact of trade expansion on economic growth are found for Central and Eastern European countries and for rapidly growing economies of Brazil, China, and India.

Secondly, these are border regions that allow for lower costs of entry to foreign markets; simultaneously, border regions are more attractive for export-oriented industries and foreign investors. This conclusion was empirically supported in empirical studies of Mexico and China.

Thirdly, industrial specialisation is also an important factor. In particular, according to the results for India and China, higher growth rates under trade expansion are associated with regions specialising in the industries with comparative advantage.

The effects of trade expansion on regional growth have important consequences for national and regional industrial and investment policies in the countries where international trade ensures a huge contribution to the national economy. A decrease in regional disparities in socioeconomic growth and redistribution of productive forces requires a set of measures aimed at a decrease in internal transportation and transaction costs as well as other costs associated with entry to foreign markets. Moreover, it is important to increase investment attractiveness and improve institutional environment, especially on inland territories. This will become an additional factor in reducing regional disparities. It might, at least partially, compensate the consequences of reallocation of productive forces from inland to border regions and territories with relatively lower costs of access to foreign markets.

These recommendations are of special importance for the economies characterised by uneven endowment of production factors and different industrial specialisations within the country, such as Russia's economy. On the one hand, our policy recommendations fit for the industrially developed territories of the Volga and Ural regions and Siberia, which have a higher export potential. However, the competitive advantage of these territories in international trade is not clearly visible due to higher costs associated with the distance to major export markets. On the other hand, our policy recommendations are specific for the North-western and inland Central regions of Russia, which do not have (or have lost) their production factors and cannot attract new financial and human capital due to high transport costs and low level of the growth of institutional environment.

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